

### REMARKS

Applicants introduce amendments to the specification which correct typographical errors. No new matter has been introduced.

#### UNITY OF INVENTION

Pursuant to PCT Rule 13 and the implementing provisions of 37 CFR §1.475, unity of invention is present in the claims at issue in this application. As set forward in the above provisions,

a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept .... Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features.

(37 CFR §1.475(a).)

To determine the nature of the “special technical features” in Markush-type claims, Part 1 of Annex B to the PCT states that

the requirement of a technical interrelationship and the same or corresponding special technical features as defined in Rule 13.2 [and 37 CFR §1.475] shall be considered to be met when the alternatives are *of a similar nature*.

(paragraph (f).) The alternatives of a Markush grouping are “of a similar nature,” in turn, where

- (A) all alternatives have a common property or activity, and
- (B)(1) a common structure is present, i.e., a significant structural element is shared by all of the alternatives ....

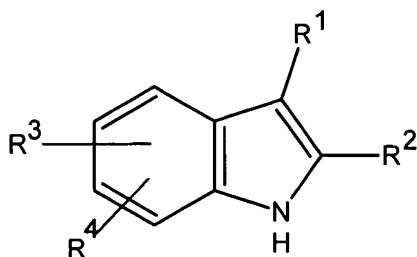
(Annex B, Part 1(f)(i).) The presence of a shared “significant structural element”

includes situations in which

the compounds share a common chemical structure which occupies a large portion of their structures.

(Annex B, Part 1(f)(ii).)

That neither this portion of the structure nor the particular substituents need be novel to establish unity of invention is demonstrated by illustrative example 18 in Annex B, Part 2 of the PCT. In that example (appended hereto for the examiner's convenience), the following compound is claimed:



where

R<sup>1</sup> is phenyl, pyridyl, thiazolyl, triazinyl, alkylthio, alkoxy, or methyl;

R<sup>2</sup>-R<sup>4</sup> are methyl, benzyl, or phenyl;

and the compounds are useful as pharmaceuticals enhancing the capacity of the blood to absorb oxygen. The example concludes that

In this case the indolyl moiety is the significant structural element which is shared by all of the alternatives. Since all the claimed compounds are alleged to possess the same utility, unity is present.

(PCT Annex B, Part 2, Section III, Example 18.)

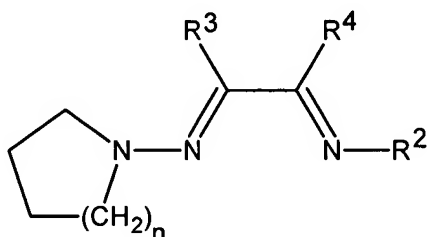
Indolyl is clearly not novel, nor are the various substituents recited for R<sup>1</sup>-R<sup>4</sup>.

However, the shared structural element is significant to each of the individual iterations of the Markush grouping, and the group, when taken as a whole, *is* novel over the art.

The various compounds that can be produced are variable, and could be construed as

“vastly different.” However, under the standards set forward in the PCT provisions and relevant supporting documents, unity of invention is present among such compounds.

Applying the above provisions to the present claims, unity of invention is also present. The presently claimed compounds share at least the following structural element:



where the substituents are as indicated in the claims,  $n$  is 1 to 3, and where the ring may be heterocyclic. The compounds, when coupled with the appropriate metal halides, are useful as catalysts for polymerization of unsaturated compounds.

Accordingly, as

- (A) all alternatives have a common property or activity, and
- (B)(1) a common structure is present, i.e., a significant structural element is shared by all of the alternatives,

the alternatives in this Markush grouping are “of a similar nature” (Annex B, Part 1(f)(i)).

In such a case, where “the alternatives [in a Markush grouping] are of a similar nature,”

the requirement of a technical interrelationship and the same or corresponding special technical features as defined in Rule 13.2 [and 37 CFR §1.475] shall be considered to be met ....

(PCT Annex B, Part 1, Paragraph (f).) In turn, as the technical interrelationship and the same or corresponding special technical features are present, this

group of inventions [is] so linked as to form a single general inventive

concept ... [as] there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features.

(37 CFR §1.475(a).) And, therefore, “the requirement of unity of invention [is] fulfilled” (*Id.*).

Applicants regret any burden the examiner may encounter in considering the present claims in their full scope, however, unity of invention *is* present, and the full scope of all claims should be examined. Additionally, the different claim groupings each include the above-discussed compounds. Examiner-defined Groups I-III include claims drawn to the compounds themselves, and claims drawn to methods for making the claimed compounds. The claims of Group IV are drawn to the claimed compounds combined with a metal halide, and those of Group V are drawn to a polymerization process using these metal halide compounds. Accordingly, the special technical feature disclosed above is present in each group of claims, and unity of invention is present among the entire set of claims.

Applicants elect the examiner-defined Group IV with traverse according to the unity of invention standards outlined above, and specifically request that at least the claims of Group V be rejoined.


#### CONCLUSION

In view of the foregoing amendments and remarks, applicants consider that the rejections of record have been obviated and respectfully solicit passage of the application to issue.

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Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees to Deposit Account No. 11-0345. Please credit any excess fees to such deposit account.

Respectfully submitted,  
KEIL & WEINKAUF

A handwritten signature in black ink, appearing to read 'David C. Liechty', with a long horizontal line extending to the right.

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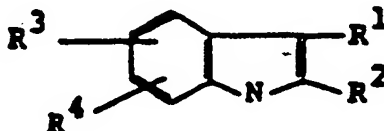
## ADMINISTRATIVE INSTRUCTIONS UNDER THE PCT

Expression of the DNA sequence in a host results in the production of a protein which is determined by the DNA sequence. The protein and the DNA sequence exhibit corresponding special technical features. Unity between claims 1 and 2 is accepted.

### III. MARKUSH PRACTICE

**Example 18**— common structure:

Claim 1: A compound of the formula:

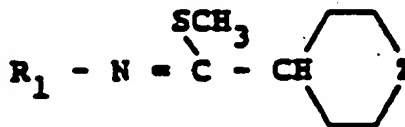


wherein  $R^1$  is selected from the group consisting of phenyl, pyridyl, thiazolyl, triazinyl, alkylthio, alkoxy, and methyl;  $R^2$ - $R^4$  are methyl, benzyl, or phenyl. The compounds are useful as pharmaceuticals for the purpose of enhancing the capacity of the blood to absorb oxygen.

In this case the indolyl moiety is the significant structural element which is shared by all of the alternatives. Since all the claimed compounds are alleged to possess the same utility, unity is present.

**Example 19**— common structure:

Claim 1: A compound of the formula:



wherein  $R_1$  is selected from the group consisting of phenyl, pyridyl, thiazolyl, triazinyl, alkylthio, alkoxy, and methyl;  $Z$  is selected from the group consisting of oxygen (O), sulfur (S), imino (NH), and methylene ( $-\text{CH}_2-$ ). The compounds are alleged to be useful as pharmaceuticals for relieving lower back pain.

In this particular case the iminothioether group  $-\text{N}=\text{C}-\text{SCH}_3$  linked to a six atom ring is the significant structural element which is shared by all the alternatives. Thus, since all the claimed compounds are alleged to possess the same use, unity would be present. A six membered heterocyclic ring would not have been of sufficient similarity to allow a Markush grouping exhibiting unity, absent some teaching of equivalence in the prior art.

**Example 20**— common structure

Claim 1: A compound of the formula:

